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ESTIMATION OF PERCENT PURITY OF ALPRAZOLAM TABLET OF DIFFERENT MARKET BRANDS.

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ABSTRACT

Alprazolam is narcotic drug used to treat anxiety disorders, panic disorders, and nausea due to chemotherapy. It is marketed by various brands. It is chemically8-chloro-1-methyl-6-phenyl-4H-[1,2,4]triazolo[4,3-a][1,4]benzodiazepine. Aim of present work is to estimate purity and percentage in Alprazolam in 4 different market brands. For the Determination of Alprazolam UV spectrophotometric method was performed. Solution of Alprazolam in 0.5N HCl shows maximum absorbance at 263nm.The percentage of Alprazolam in tablets was 99.5, 99.6, 99.8, and 98.9.

Keywords: Alprazolam, UV Spectroscopy, Estimation, Tablets,

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1. Introduction:

A drug can be defined as a natural or synthetic substance that is used to produce physiological effect in man. But in modern context drugs mean something different to each person. To some, drugs are necessity for sub staining and prolonging life; to others drugs provide an escape from the pressures of life.

Narcotics and dangerous drug can be categorized by the effect they have on the user. They may be depressant, stimulants or hallucinogens.

History: Alprazolam was first released by Upjohn (now a part of Pfizer). It is covered under U.S. Patent 3,987,052, which was filed on October 29, 1969, granted on October 19, 1976, and expired in September 1993. Alprazolam was released in 1981. The first approved indication was panic disorder. Alprazolam was invented by Pfizer and is marketed under the trade name Xanax. Alprazolam belongs to a group of medicines called short-acting drug, benzodiazepines. Alprazolam,

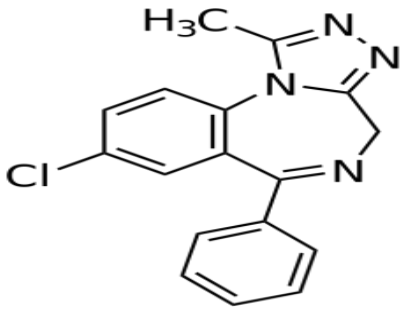
like other benzodiazepines, binds to specific sites on the GABAA gamma-amino-butyric acid receptor.

Properties: Alprazolam possesses anxiolytic, sedative, hypnotic, anticonvulsant, and muscle relaxant properties.

Medical uses**:**Alprazolam is primarily used to treat anxiety disorders, panic disorders, and nausea due to chemotherapy.

Detection in body fluids**:** Alprazolam may be quantitated in blood or plasma to confirm a diagnosis of poisoning in hospitalized patients, provide evidence in an impaired driving arrest or to assist in a medicolegal death investigation.

Structure:The chemical name of Alprazolam is 8-chloro-1-methyl-6-phenyl-4H-*s*-triazolo [4, 3] [1, 4] benzodiazepine.



2. EXPERIMENTAL:

Materials required and used were of A.R. grade. Standard methods used were as prescribed by ICHQ2 Guidelines and as per Khedkar Amol et.al

Melting pt.: Melting point of alprazolam was determined by capillary method.

Solubility: Methanol and 0.1N HCl, slightly soluble in ethanol, acetone, partially soluble in water.

UV Absorption spectrum: Alprazolam was subjected to UV absorption spectrophotometry to identify λmax. The solution (10µg/ml) was scanned over range of 200to 400nm and spectrum was recorded.

IR spectrum: The IR spectrum of alprazolam was obtained using potassium bromide pallet technique. The drug sample was mixed with IR grade potassium bromide and scanned in the range of 4000-400 cm^{-1}.

Selection of media: Main criteria for medium selection were stability and solubility. The medium, used in reported method were methanol, water, hydrochloric acid (250:250:1) [Pawan Basniwal]. Generally, 0.1N hydrochloric acid is used as dissolution medium.

Preparation of Standard solution: Initially, stock solution of drug 1000µg/ml was prepared by dissolving 100mg of alprazolam in 100ml 0.1N HCl. Standard stock solution of drug was prepared by diluting 10ml of the initial stock solution upto 100ml with 0.1N HCl.

Preparation of calibration curve: Aliquots of 1 to 6 ml of standard stock solution were transferred in a series of calibrated 10ml of standard volumetric flasks, and volume was adjusted with 0.1N HCl. The absorbance of solutions was recorded at 262nm.

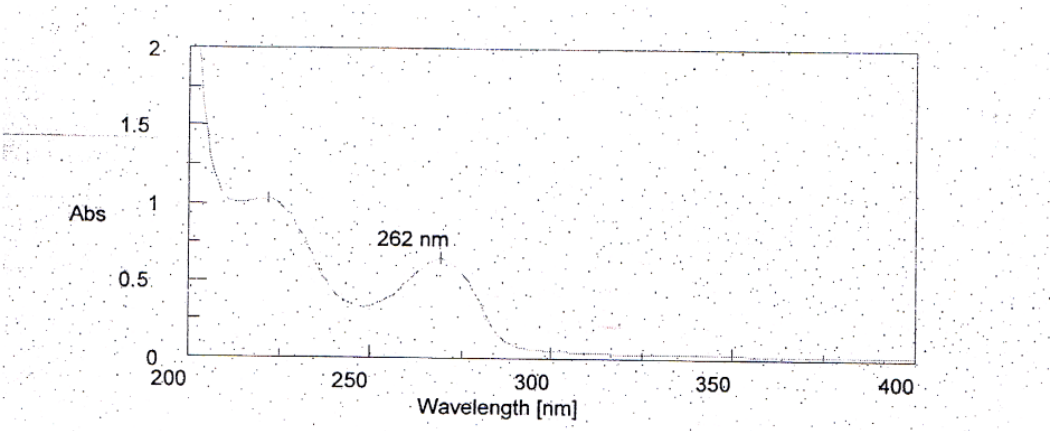
Limit of detection (LOD) and Limit of Quantitation (LOQ): The LOD and LOQ of Alprazolam was determined using standard deviation of response and slope

$$\mathbf{LOD = 3.3\ \delta/S} \quad \text{and} \quad \mathbf{LOQ = 10\ \delta/S}$$

Where, δ = Standard deviation & S = Slop of calibration curve

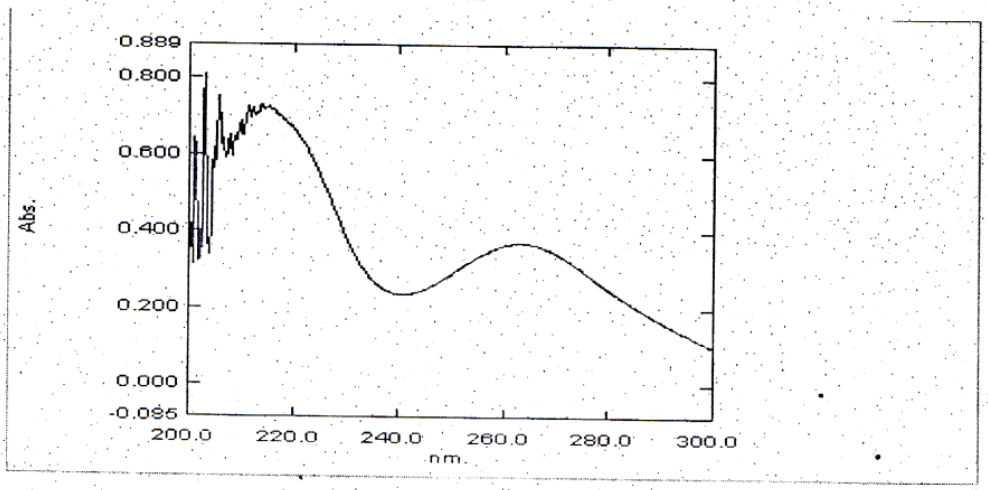
3. RESULT AND DISCUSSION:

Alprazolam is white to off white crystalline powder, odorless,soluble in methanol, Dimethylsulfoxide and 0.1N Hydrochloric acid, slightly soluble in ethanol and partially soluble in water. The melting point of Alprazolam was found to be 120^0C which confirmed purity of Alprazolam. The percent purity of Alprazolam in various trade was found to be 99.5, 99.6, 99.8, and 98.9.



UV spectrum of Alprazolam in methanol: hydrochloric acid (250: 250: 1)

FTIR spectrum of Pioglitazone hydrochloride exhibited characteristic peaks as shown in Figure 11.



FTIR spectrum of Alprazolam

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